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Title: INDUSTRY WILL BENEFIT FROM PARTICIPATION IN THE JSF PROGRAM

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After many lengthy debates, the Dutch Cabinet decided to recommend to Parliament that the Netherlands participate in the Joint Strike Fighter (JSF) F-35 program. Dutch industry is thrilled with this recommendation. Large and small companies expect to benefit from participation in the development of the JSF. Dutch industry already is deeply involved in the JSF F-35 program on a "best-value" basis. If Parliament ratifies this recommendation, it will enable more of the highly capable Dutch industry to compete for "best-value" participation in JSF F-35

Dutch participation in the JSF program is through the contribution of a wide range of technologies, including wiring, construction and materials, simulation, engine parts, speech recognition, cooling systems and aero-acoustics. Well-known companies like Stork and Philips are involved in the JSF program. The activities of a number of other participating companies are mentioned below.

Urenco Aerospace is an expert on system parts that must rotate quickly, reliably and with great length. The company's aviation division, in joint effort with the National Aerospace Laboratory (NLR), is currently in the process of developing a sub-critical carbon fiber epoxy composite shaft . This shaft must connect the main engine of the navy version of the JSF with the so called 'lift fan'. This work is expected to increase Urenco's turnover by 250 million euros (approximately \$215 million), a growth of 50%.

The NLR has a staff of 900 and a turnover of more than 74 million euros (approximately \$64 million). It is an independant, non-profit research institute that provides scientific support and technical consultancy

services to aerospace companies, civil and military operators of aircraft and spacecraft, government agencies and international organizations that are concerned with aviation and spaceflight all over the world. It is a foundation and not considered to be a government organization. The NLR windtunnel technology is used for JSF development and testing.

The company Axxiflex has a turnover of 8 million euros (approx. \$6.9 million) and 100 employees. For Pratt & Whitney and General Electric, it will design aids for the production of aircraft parts and the revision and maintenance of the JSF engines. The company expects yearly turnover to increase by approximately 10 million euros (approximately \$8.6 million) as a result of participation in the JSF project. Axxiflex estimates an initial creation of 75 additional jobs and another 75 for spin-off projects.

For Pratt & Whitney, the Dutch Center for Laser Research (NCLR) will be using an ultraviolet laser to drill tiny cooling holes in aircraft parts destined for the jet engines. If the technique is a success in the JSF, the civil aviation industry may also want to make use of this technology. Participation in the JSF program is expected to increase turnover by tens of millions of euros per year.

Nedtech Engineering has an annual turnover of 2.5 million euros (approx. \$2.6 million) and 30 employees. For Lockheed Martin, GE and Rolls Royce, the company will be performing design activities that are related to the aircraft structure and engine. This can lead to a turnover increase of 40%.

Northrop Grumman and the Dutch research organization, TNO, have signed a contract for the development of a new generation of infrared sensors. Under this contract, TNO will develop signal-conditioning algorithms for the JSF. A hardware implementation of these algorithms is anticipated with which an opportunity to produce parts of these sensors in the Netherlands is created for Dutch industries.

TNO is also working together with Fokker Space and the NLR to contribute the 'Simulation Architecture' to the JSF. This advanced simulation architecture is promising lower training expenses for future JSF pilots. The JSF Simulation Architecture offers the potential to reduce JSF training system costs while enhancing the ability of the design team and future JSF customers to conduct more comprehensive JSF simulations over a world-wide network.

Fokker Space, with its 350 employees and a turnover of 100 million euros (approx. \$86.2 million) is considered to be the largest Dutch aerospace company. At the onset of the JSF project, Fokker Space expects to increase turnover by 25 million euros (approx. \$21.6 million) from participation in the JSF development program.

Fokker Aerostructures, Fokker Special Products and Fokker Elmo have agreed to perform four "work packages" for the Lockheed Martin JSF during EMD:

- Assignment of an air-vehicle advanced-design specialist to the Systems Engineering Integration Team (SEIT).
- Assignment of an airframe certification specialist to the SEIT.
- The design, development, certification, production and support of utility doors for EMD and production.
- The detailed design, fabrication and production of wire harnesses for EMD and production.

SP Aerospace, with a turnover of 30 million euros (approx. \$25.9 million) and 300 employees, is concentrating on the development and production of the tailhook for the navy version of the JSF. This can lead to increased turnover and employment in the coming decades because high safety demands require regular replacement of some aircraft parts. Participation in the JSF program is also expected to open doors to implementing newly developed applications in other aircraft.

Eldim, with a turnover of 45 million euros (approx. \$38.8 million) and 400 employees, supplies high temperature seals for the turbines in the

JSF jet engines. Spread over the next 20 years, Eldim expect orders worth approximately 500 million euros (approx. \$431 million) and anticipates the creation of 100 jobs. Sister company Sulzer Metco Coating is counting on increased turnover of 100 million euro (approx. \$86.2 million) from the development and production of ceramic and metallic heat repelling coatings for the turbine parts.

The Prognostics Health Management Consortium (consisting of Perot Systems, NLR, TNO and Sun Electric Systems) is providing the Intelligent Help Environment (IHE) for the JSF. The IHE is a suite of tools designed to assist maintenance personnel in troubleshooting hard-to-diagnose problems. Participation in the JSF program is expected to increase turnover by approximately \$50 million. The production and maintenance phases of the JSF project are expected to generate orders worth \$200 million. The consortium also expects to gain orders from engine manufacturers worth \$30 million in turnover.

Senior Aerospace Bosman, with a turnover of 12 million euros (approx. \$10.3 million) and 120 employees, will introduce a new titanium alloy production technology. This technology has not yet been patented. The company expects yearly turnover to increase by 60 million euros (approx. \$51.7 million) and anticipated the creation of 35 additional jobs.

Sources of information include: The Dutch newspaper 'Het Financieel Dagblad', Lockheed Martin press releases and information obtained from individual companies.

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IMI Customer Satisfaction Survey

U.S. Department of Commerce
International Trade Administration
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